



# OECD Mining Regions: building a network to enhance productivity and well-being

5th and 6th October 2017  
Antofagasta - Chile

CONVENES



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# CHALLENGES AND OPPORTUNITIES OF MINING REGION OF ANTOFAGASTA

MARLENE SÁNCHEZ TAPIA  
Executive President  
Mining Cluster of Region of Antofagasta  
CHILE



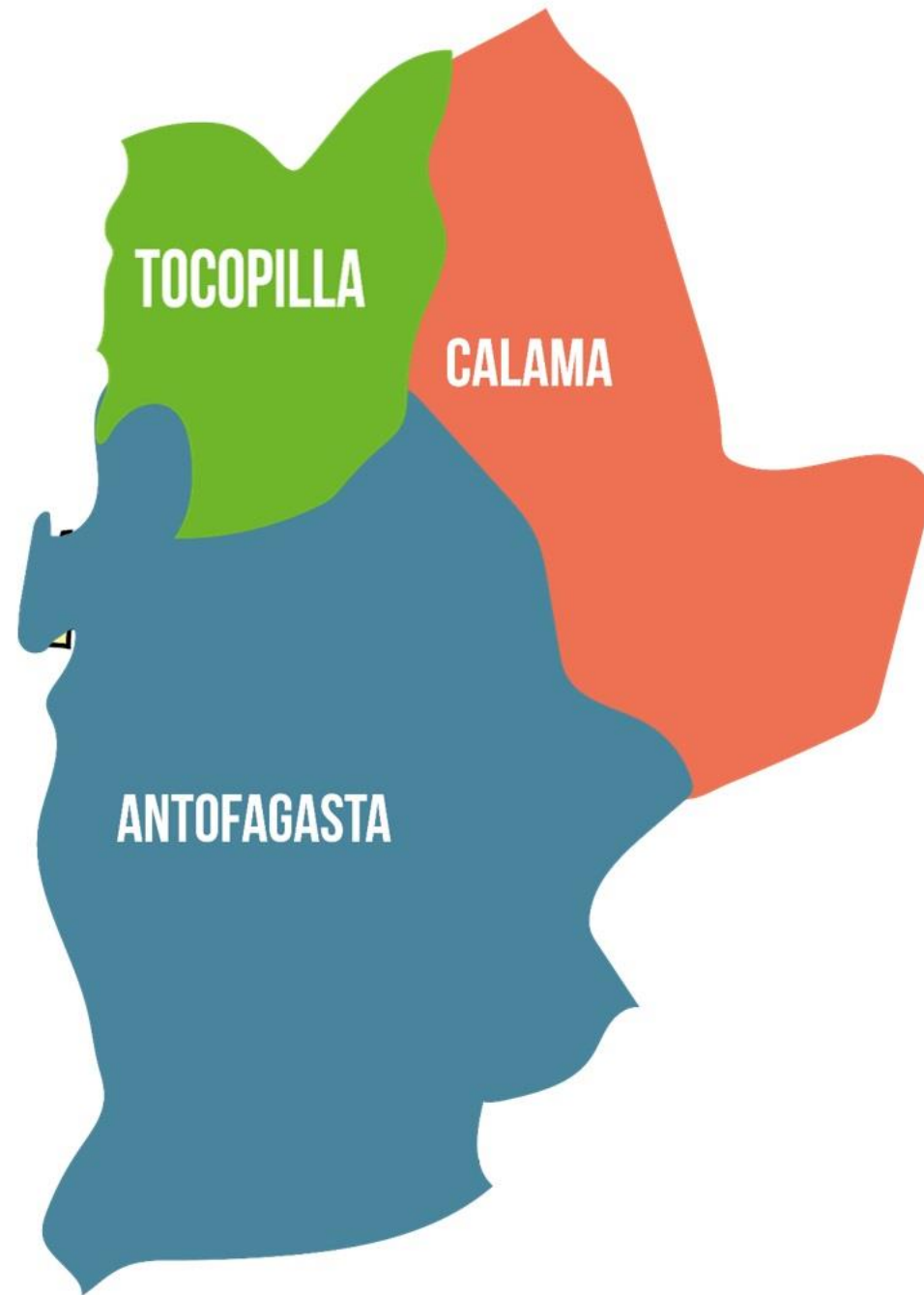
Municipalidad  
Antofagasta



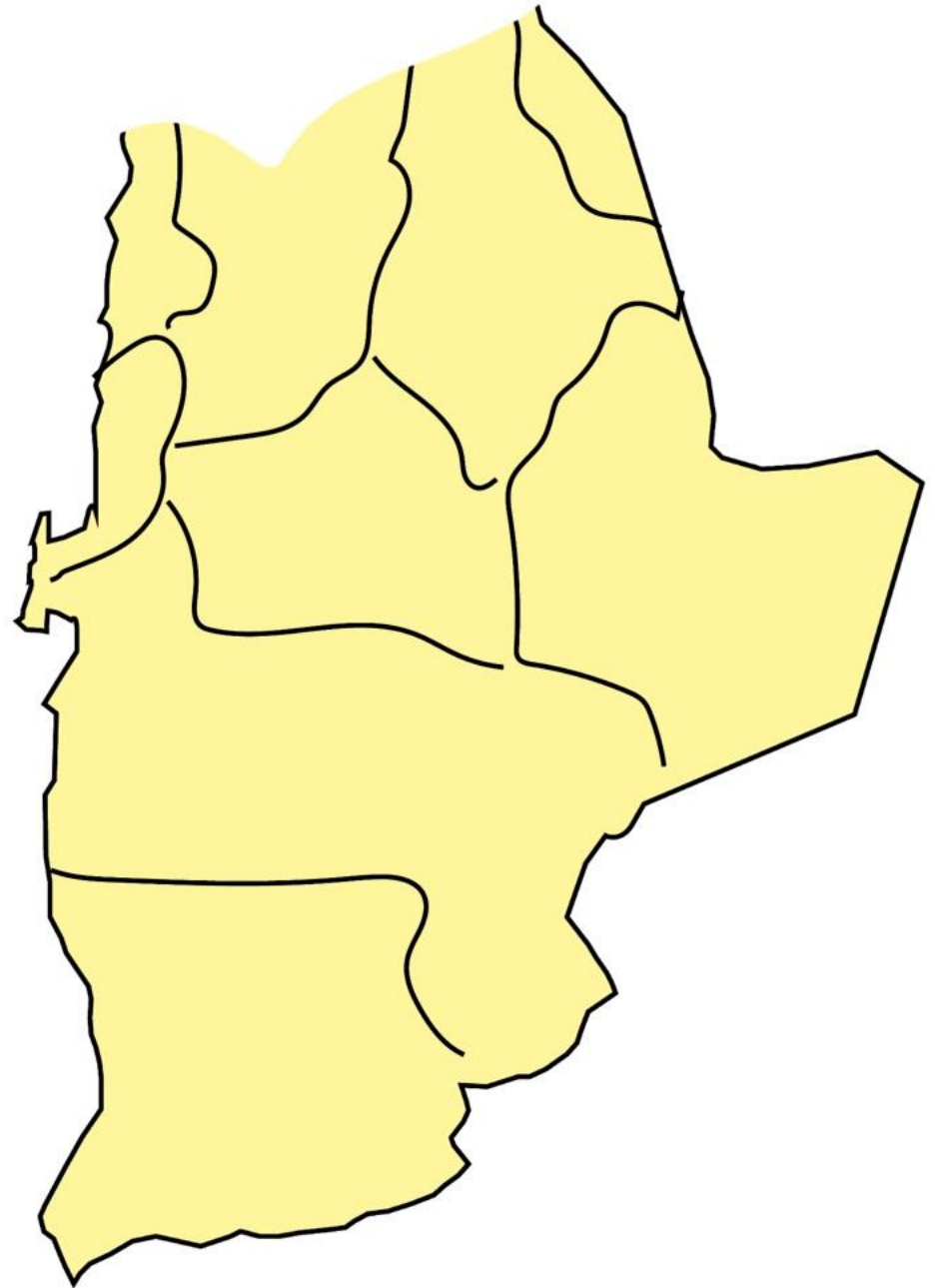
The background of the image is a dark, textured grid. Within the grid's cells, various numbers are visible, appearing to be made of a glowing, translucent material. The numbers are partially obscured and out of focus, creating a sense of depth and a futuristic or data-driven aesthetic. The overall color palette is dark with warm, glowing highlights from the numbers.

# REGION OF ANTOFAGASTA IN NUMBERS

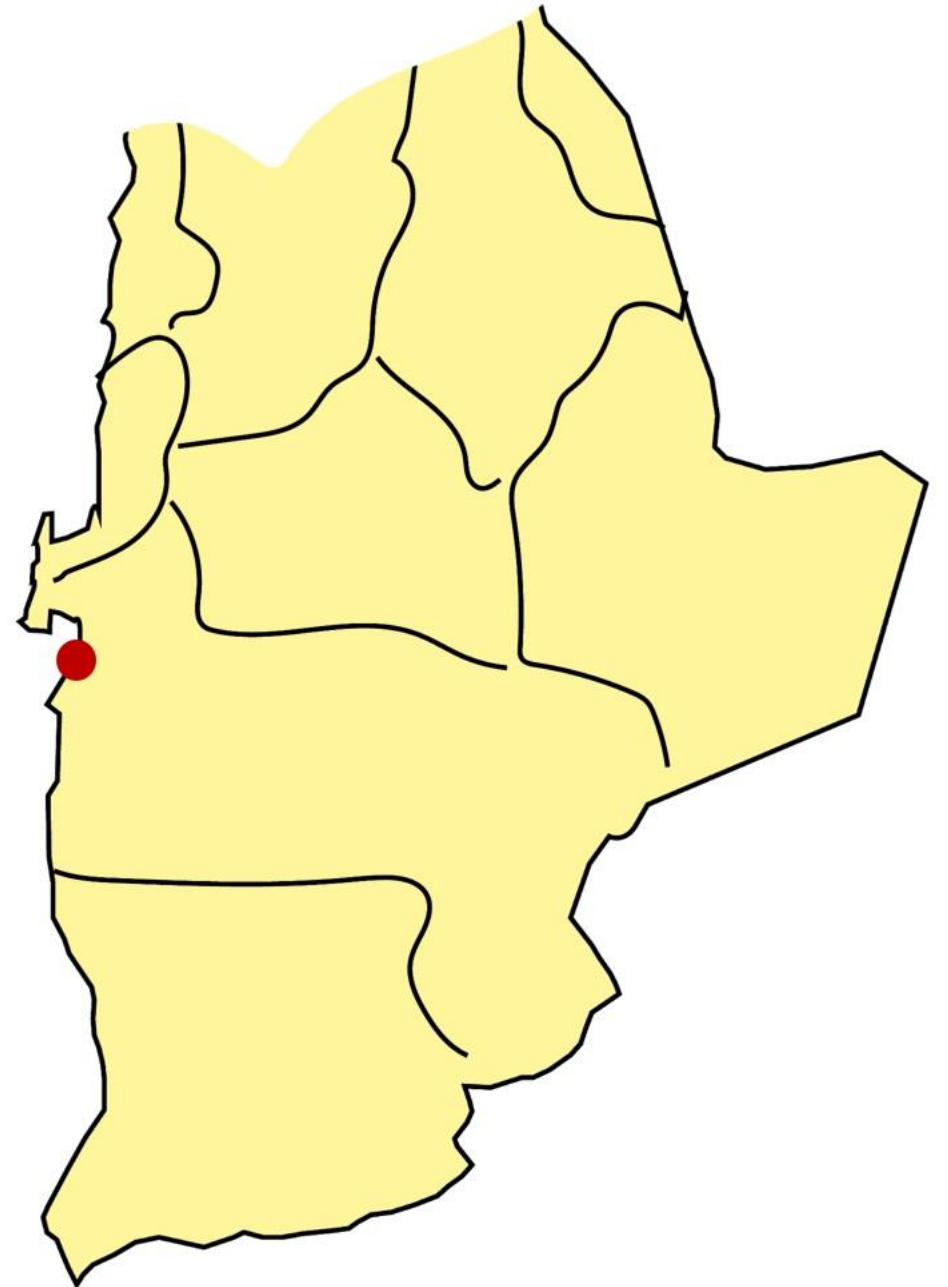
# 3 Provinces



9 communes

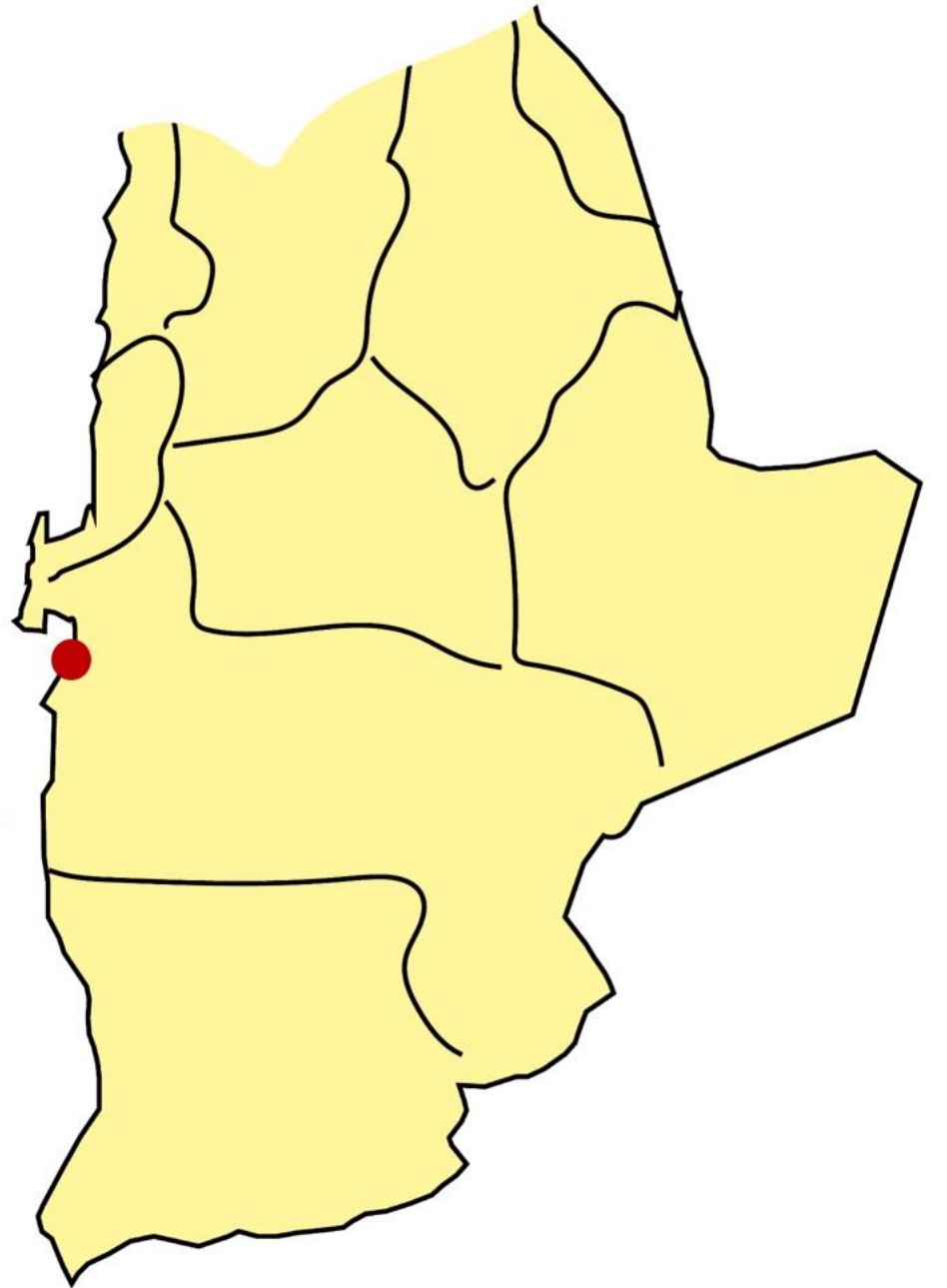


Regional Capital  
**ANTOFAGASTA**





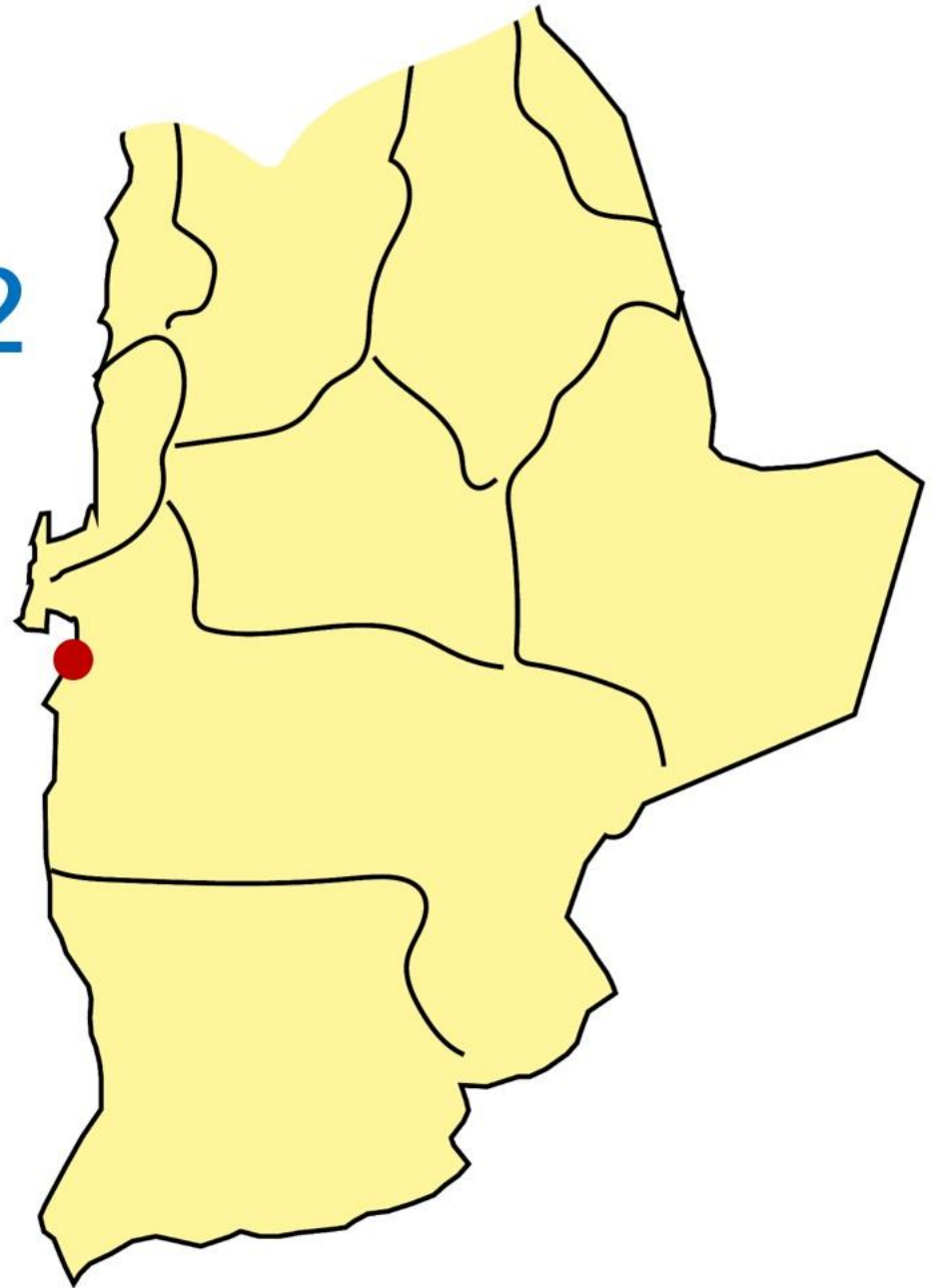
**599.335**  
**inhabitants**



**SURFACE 126.049 km<sup>2</sup>**

**US\$ 1.604,4 MILLIONS  
EXPORTATIONS**

**65% PIB**







**10% PIB**



**50%**

**EXPORTACIÓN**



**FOREIGN INVESTMENT**



# COPPER MINING

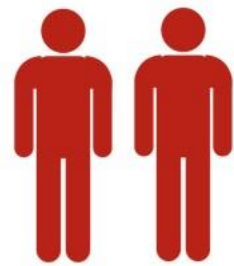
**FOREIGN INVESTMENT**



**15%** Fiscal  
Incomes



**10 YEARS**



=

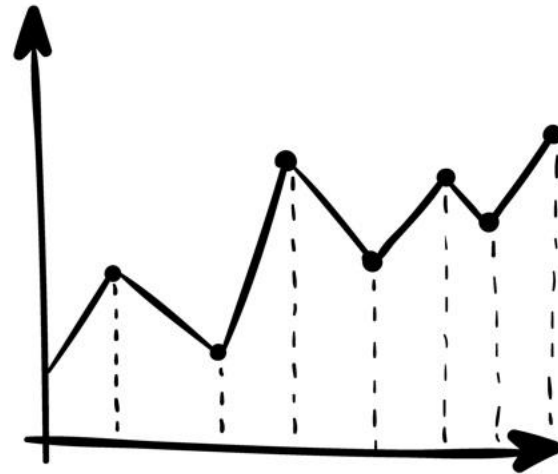
70.000

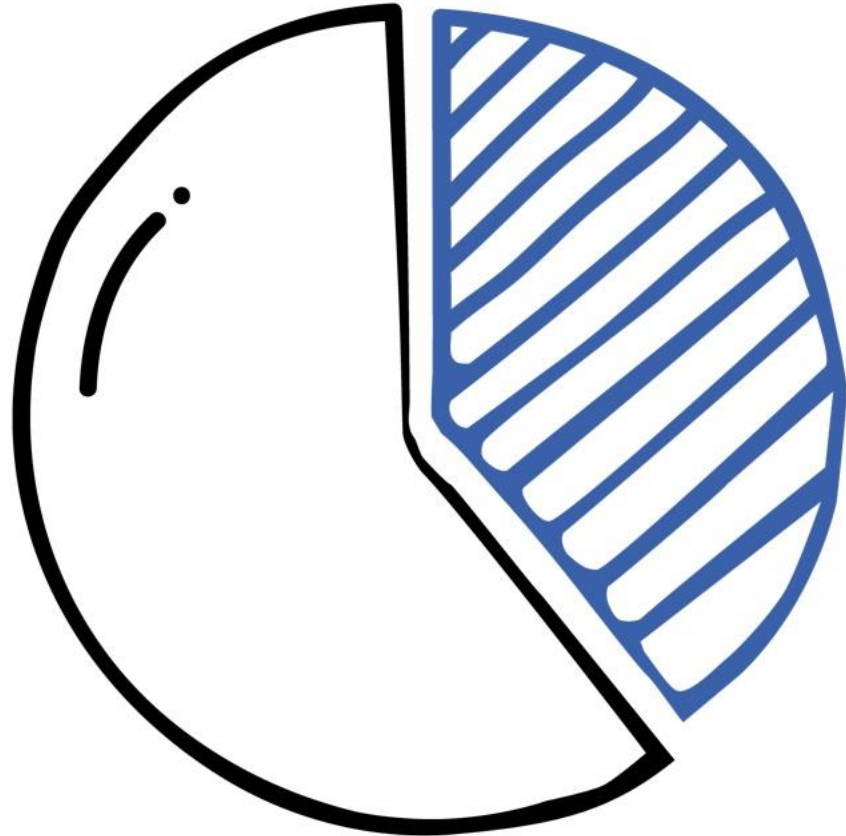


+ 150.000



20%





**CHILE**

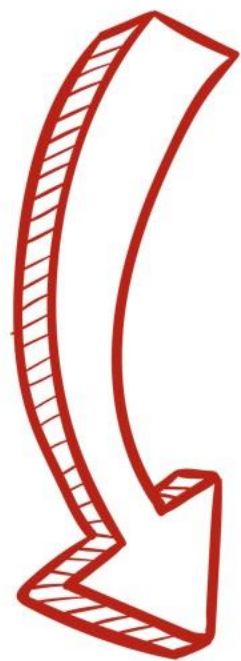




2016 ↗ 2025



**14%**



2017



59% +

2021

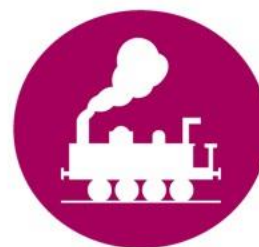
# INHABITANT STRUCTURE



2 airports



2 ports



2 railway



5 border  
crossing



1 center of  
distribution  
area

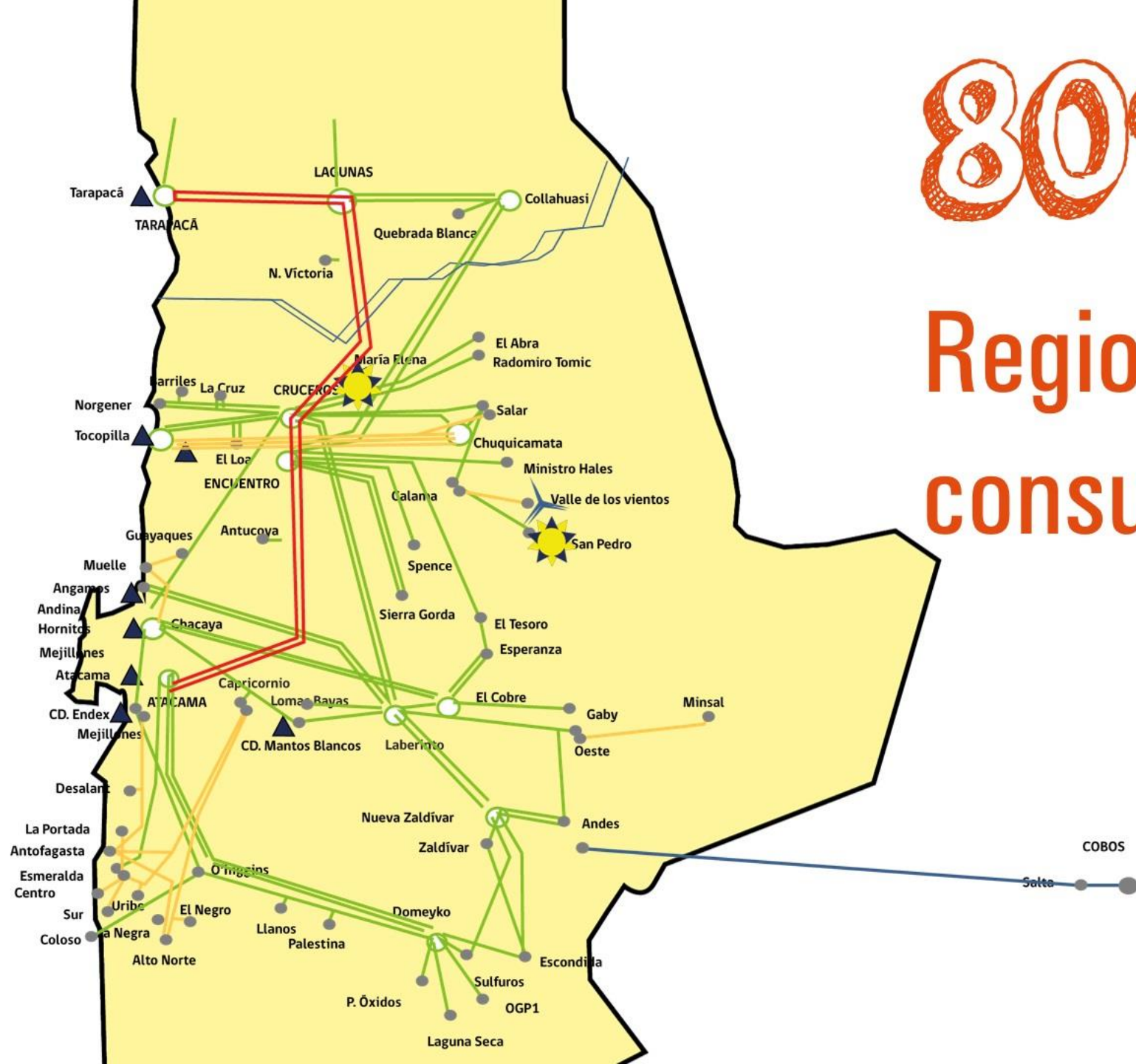


4 zones of  
Logistic support

A photograph of a wind farm at sunset. The sky transitions from a deep orange near the horizon to a dark purple at the top. Several wind turbines are silhouetted against the sky, with their blades in motion. The text 'MIXED ENERGETIC INFRASTRUCTURE' is overlaid in the center in a bold, white, sans-serif font.

# MIXED ENERGETIC INFRASTRUCTURE

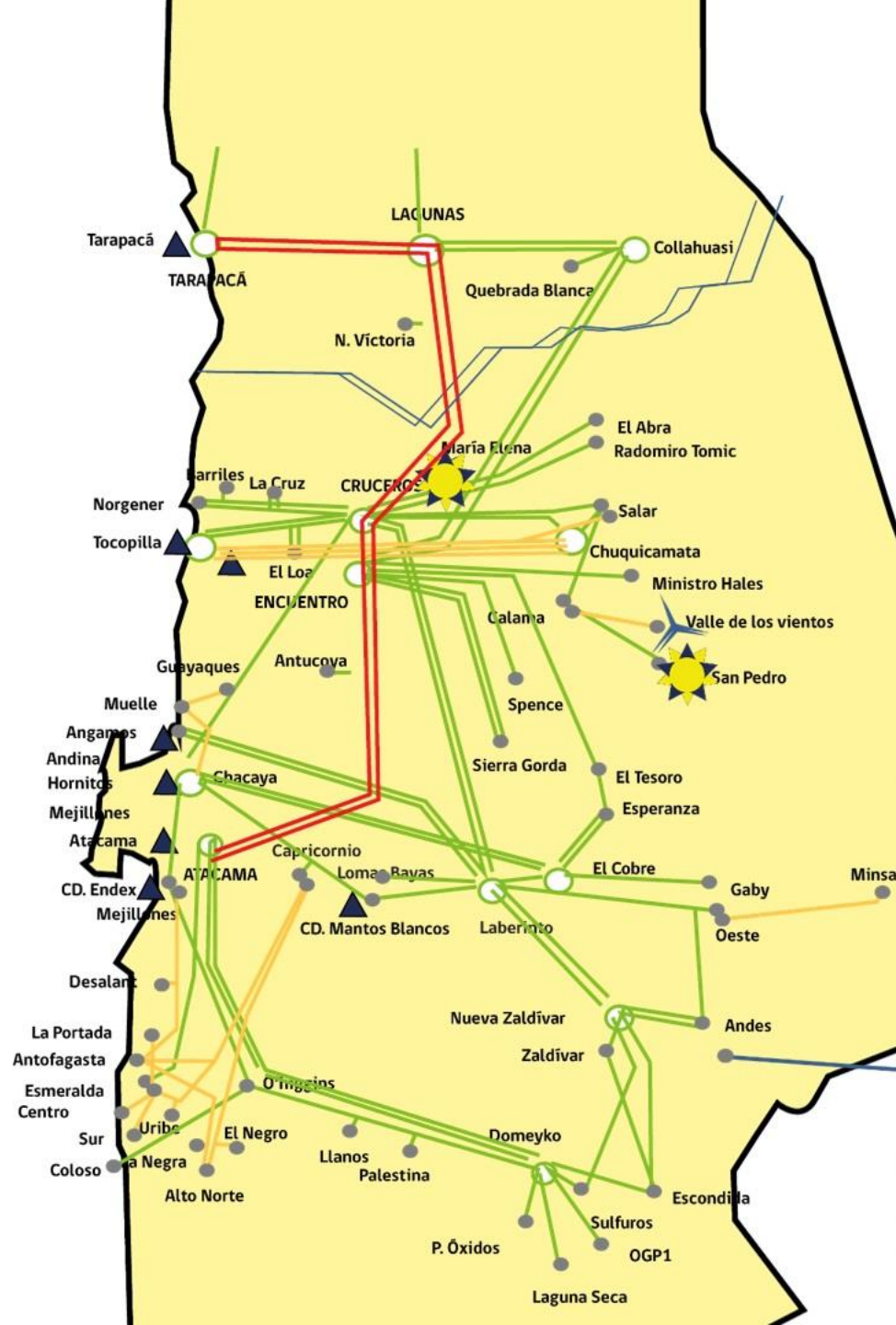
-  Nudo
-  Subestación
-  Central Térmica
-  Central Hidroeléctrica
-  Central Eólica
-  Línea en 350 kv
-  Línea Troncal 220 kv
-  Línea en 220 kv
-  Línea en 110 kv



80%

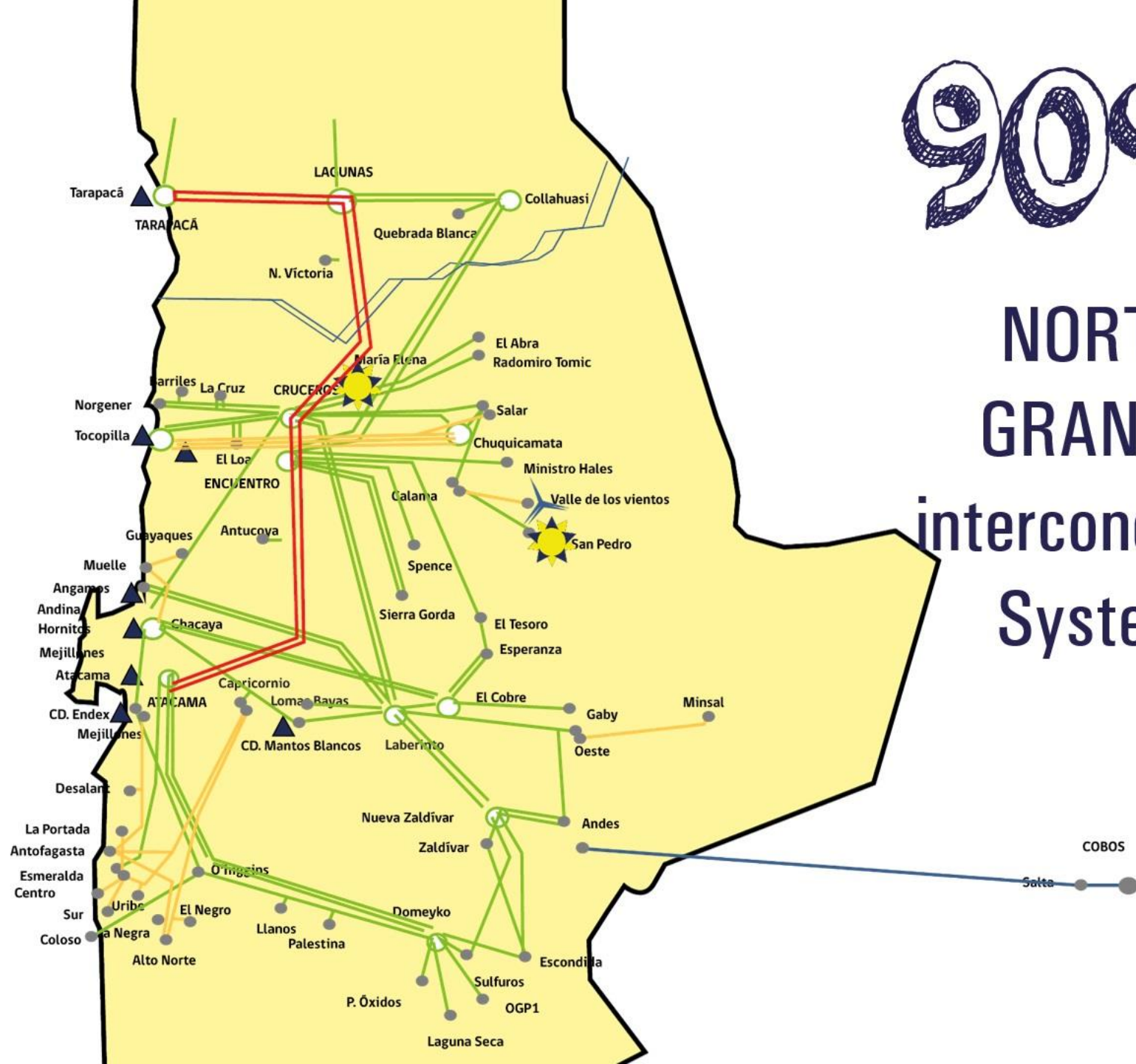
Regional  
consume

-  Nudo
-  Subestación
-  Central Térmica
-  Central Hidroeléctrica
-  Central Eólica
-  Línea en 350 kv
-  Línea Troncal 220 kv
-  Línea en 220 kv
-  Línea en 110 kv



**PROJECTS  
under  
CONSTRUCTION  
2.700 MW**

-  Nudo
-  Subestación
-  Central Térmica
-  Central Hidroeléctrica
-  Central Eólica
-  Línea en 350 kv
-  Línea Troncal 220 kv
-  Línea en 220 kv
-  Línea en 110 kv



90%

# NORTE GRANDE interconnected System



-  Nudo
-  Subestación
-  Central Térmica
-  Central Hidroeléctrica
-  Central Eólica
-  Línea en 350 kv
-  Línea Troncal 220 kv
-  Línea en 220 kv
-  Línea en 110 kv



**3,4%**  
interconnected  
**System**

-  Nudo
-  Subestación
-  Central Térmica
-  Central Hidroeléctrica
-  Central Eólica
-  Línea en 350 kv
-  Línea Troncal 220 kv
-  Línea en 220 kv
-  Línea en 110 kv



**Electric capacity**  
**5.734,4**  
**MW**

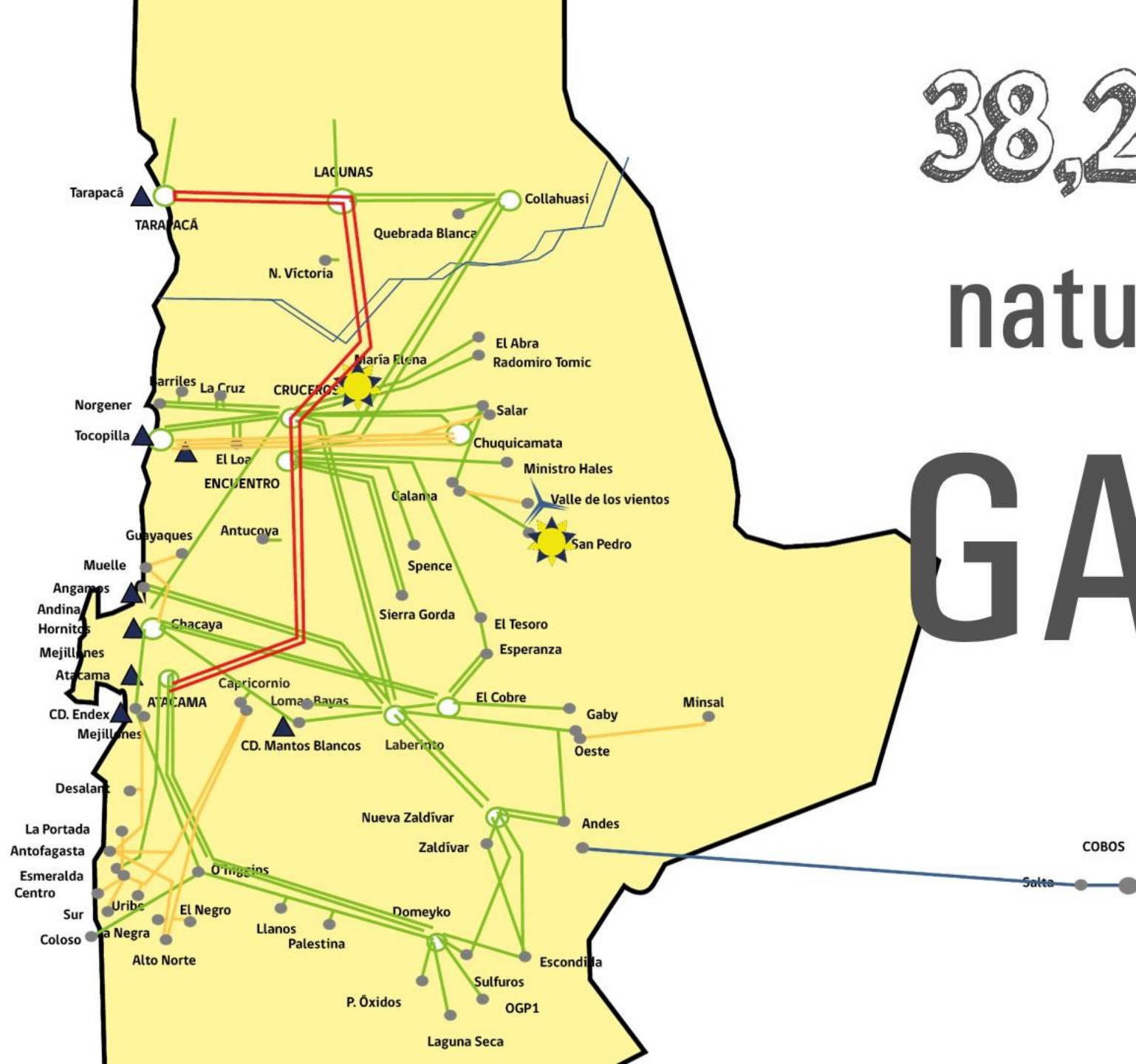
-  Nudo
-  Subestación
-  Central Térmica
-  Central Hidroeléctrica
-  Central Eólica
-  Línea en 350 kv
-  Línea Troncal 220 kv
-  Línea en 220 kv
-  Línea en 110 kv



# coal

# 43,6%

-  Nudo
-  Subestación
-  Central Térmica
-  Central Hidroeléctrica
-  Central Eólica
-  Línea en 350 kv
-  Línea Troncal 220 kv
-  Línea en 220 kv
-  Línea en 110 kv

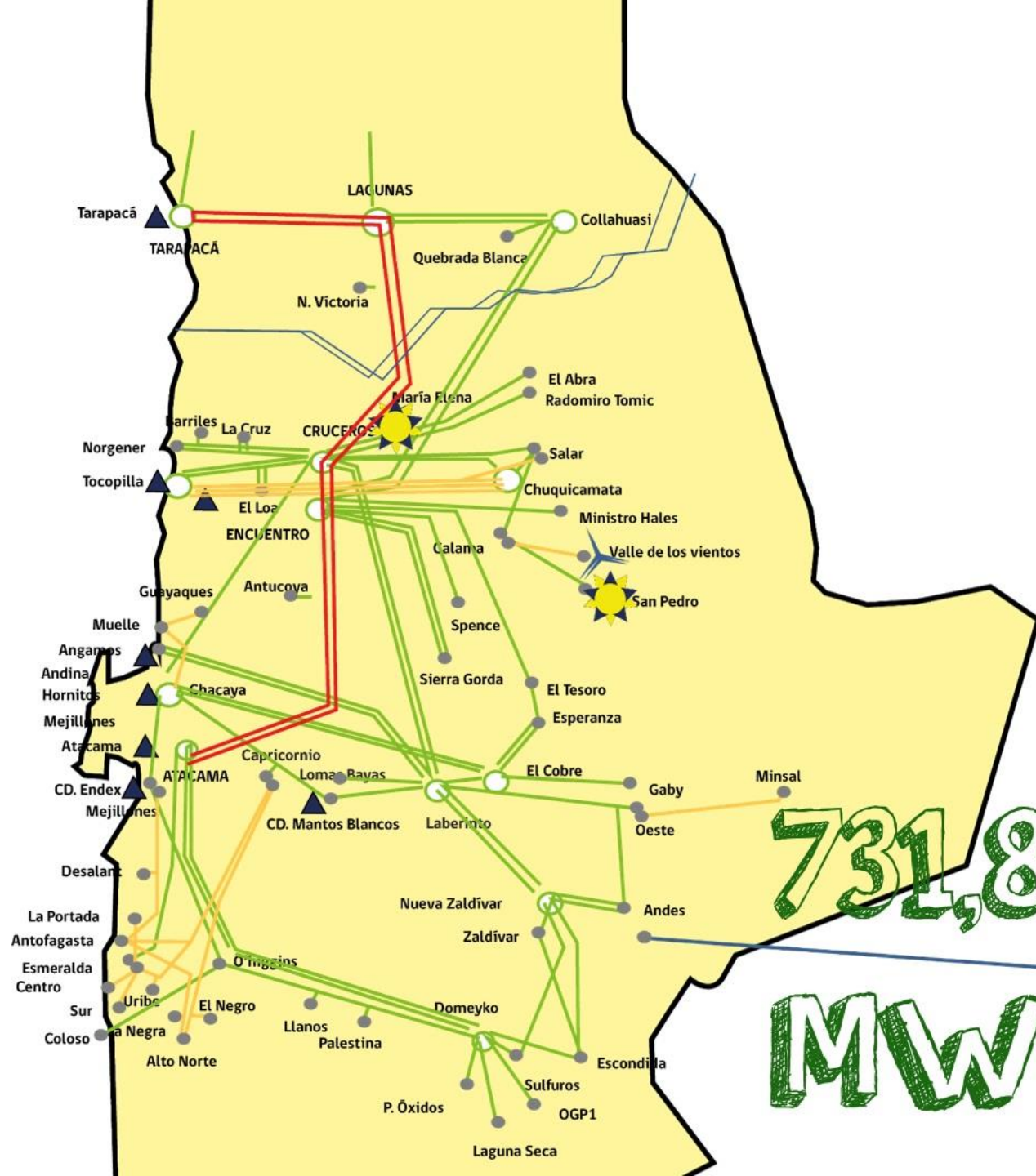


38,2%

natural

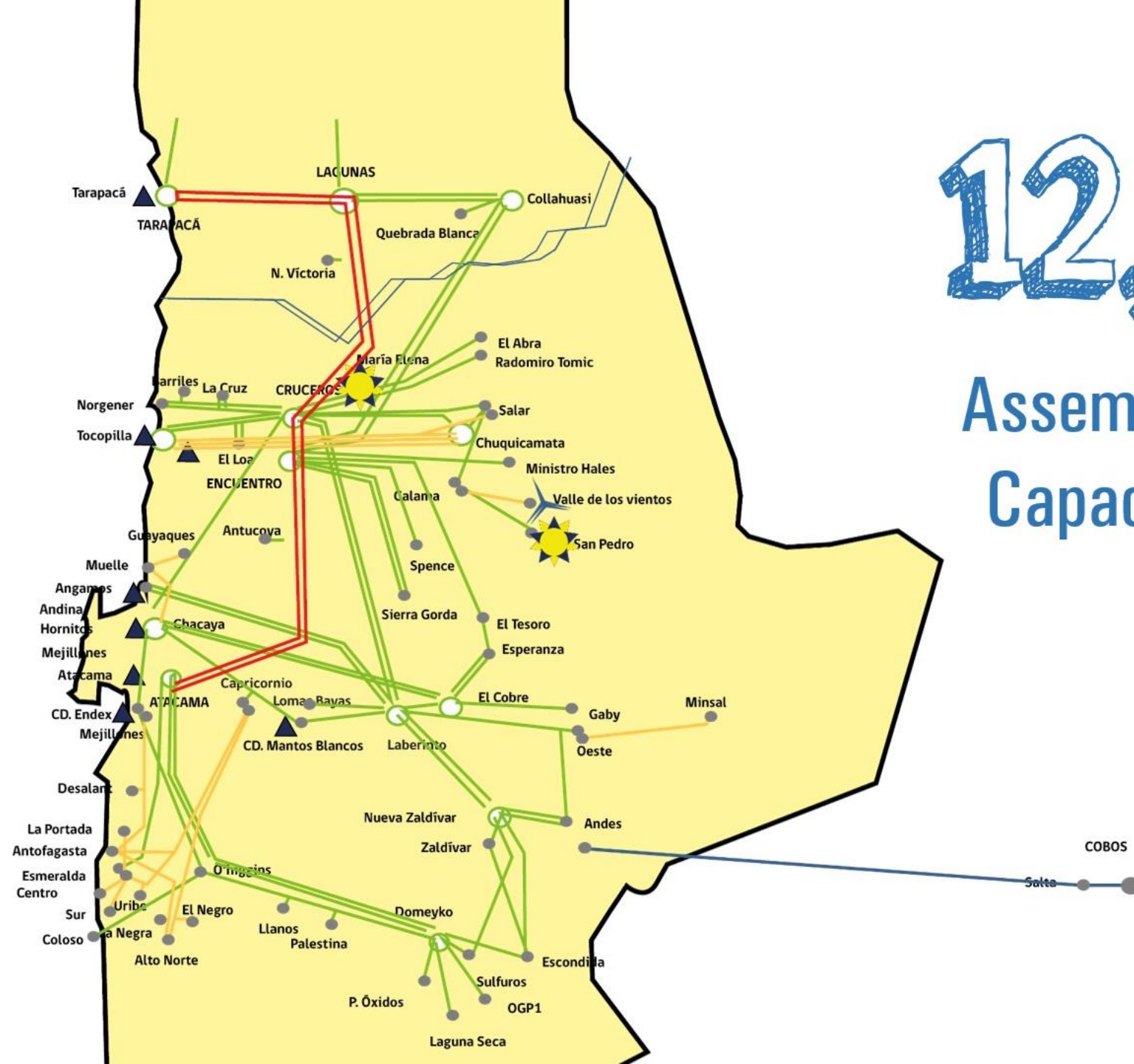
GAS

-  Nudo
-  Subestación
-  Central Térmica
-  Central Hidroeléctrica
-  Central Eólica
-  Línea en 350 kv
-  Línea Troncal 220 kv
-  Línea en 220 kv
-  Línea en 110 kv



**731,8 renewable**  
**MW** sources

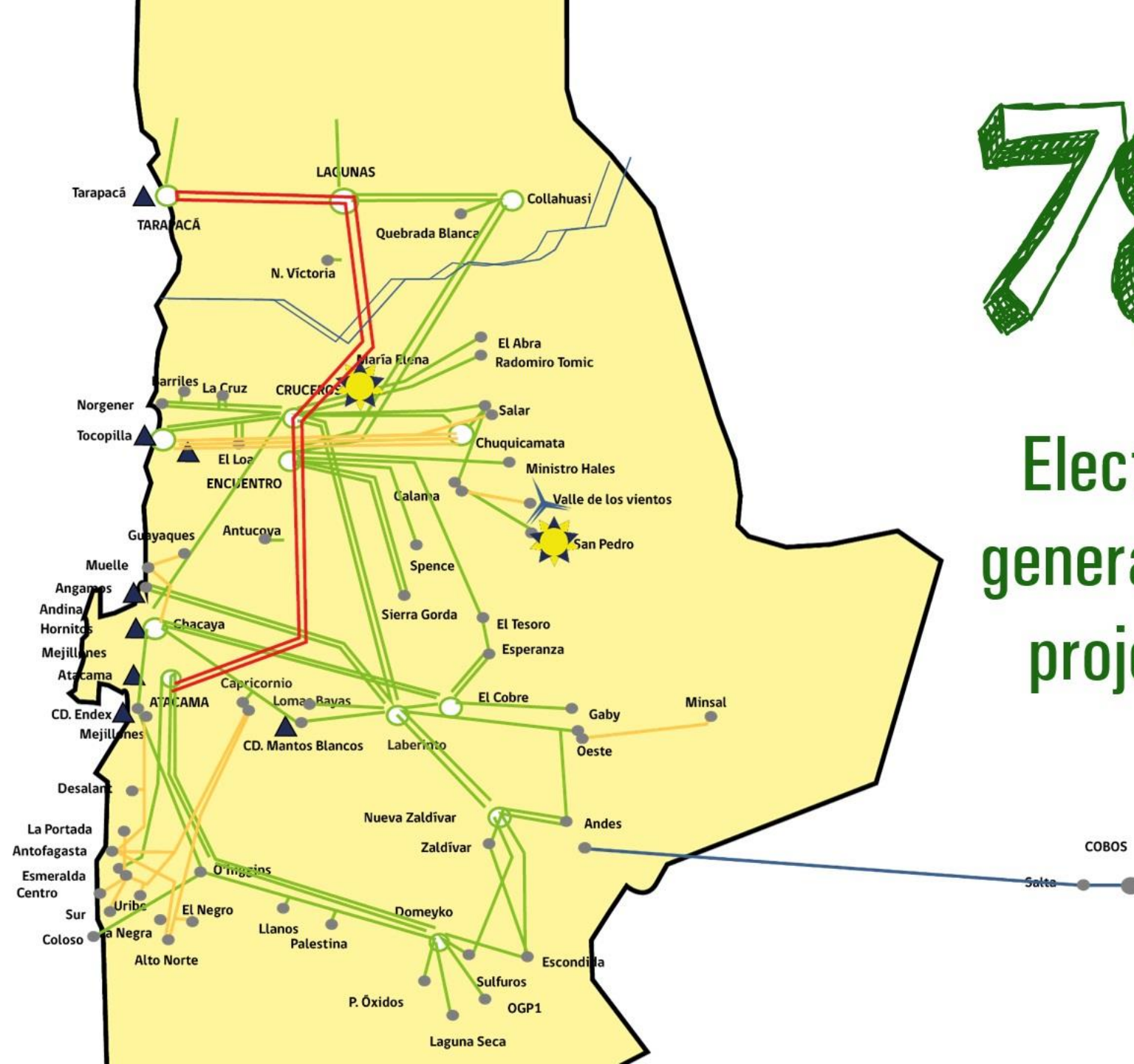
-  Nudo
-  Subestación
-  Central Térmica
-  Central Hidroeléctrica
-  Central Eólica
-  Línea en 350 kv
-  Línea Troncal 220 kv
-  Línea en 220 kv
-  Línea en 110 kv



# 12,8

## Assembled Capacity

-  Nudo
-  Subestación
-  Central Térmica
-  Central Hidroeléctrica
-  Central Eólica
-  Línea en 350 kv
-  Línea Troncal 220 kv
-  Línea en 220 kv
-  Línea en 110 kv



# 78

## Electric generation project

-  Nudo
-  Subestación
-  Central Térmica
-  Central Hidroeléctrica
-  Central Eólica
-  Línea en 350 kv
-  Línea Troncal 220 kv
-  Línea en 220 kv
-  Línea en 110 kv



# Potencial

# 13.322,8 MW



An aerial photograph of a large-scale open-pit mine. The mine is characterized by numerous terraced levels, or benches, which are visible as concentric, roughly circular or rectangular steps descending from the top of the pit. The rock faces are a mix of dark grey and brownish-yellow, indicating different geological layers. In the center of the mine, there is a large, flat area that appears to be a processing plant or a central storage area, with several structures and what looks like a conveyor system. The overall scene is one of intense industrial activity and significant land alteration.

# **MINING CLUSTER DEVELOPMENT STAGES**



1990 - 2000

PRIVATE  
INVESTMENT  
OF A GLOBAL  
SCALE



2000 - 2010

REGIONAL  
MINING  
CLUSTER,  
THE  
REGIONAL  
ANSWER



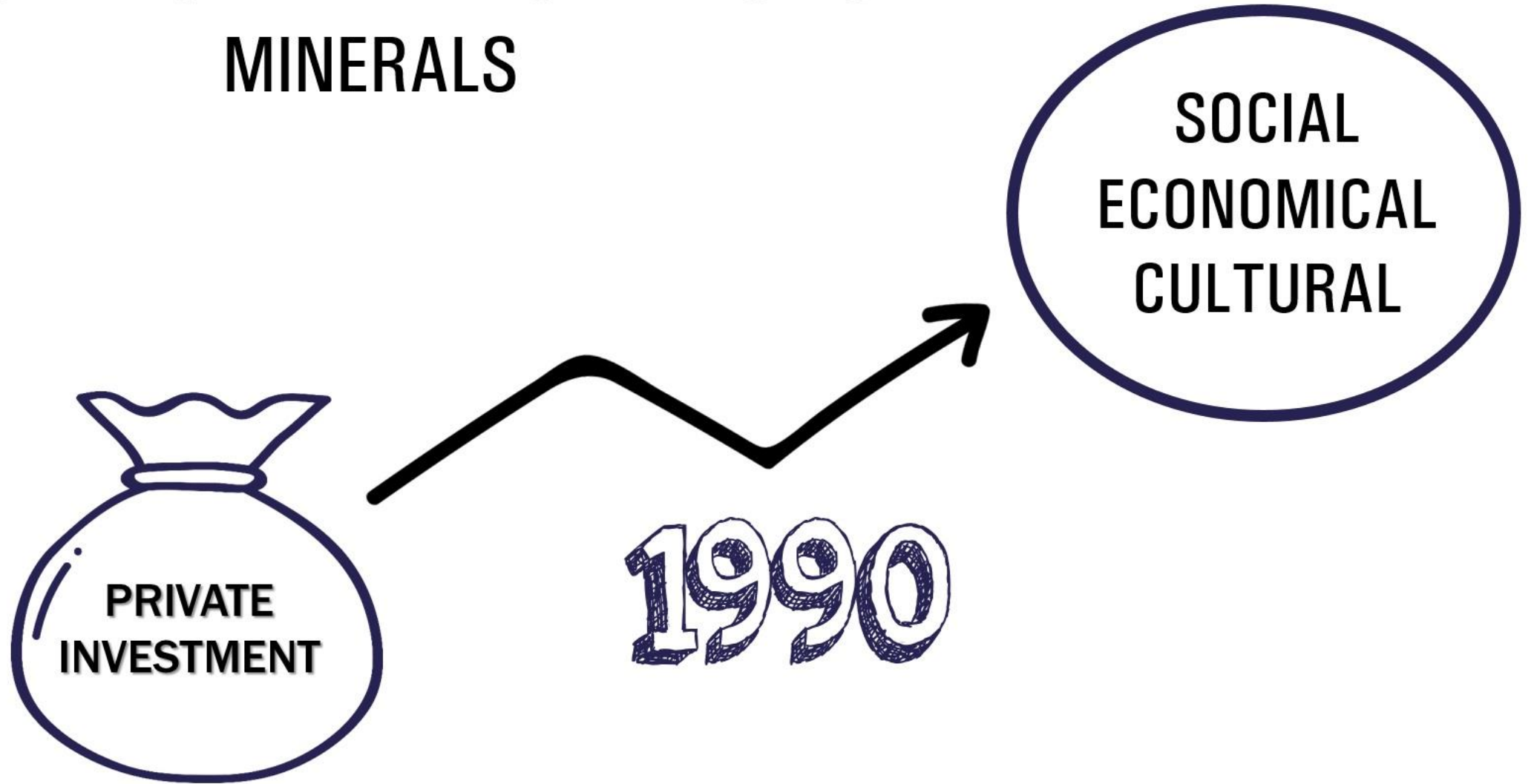
2014 - 2017 +

REGIONAL  
MINING  
CLUSTER,  
THE  
OPPORTUNIT  
Y TO  
CONSOLIDATE



# **STAGE 1: WORLD SCALE OF PRIVATE INVESTMENT**

# EXPLOITATION AND EXPORTATION OF MINERALS



















# EXPLOITATION AND EXPORTATION OF MINERALS

## CHANGES



# EXPLOITATION AND EXPORTATION OF MINERALS



SOCIAL AND  
PRODUCTIVE  
STRUCTURE

# EXPLOITATION AND EXPORTATION OF MINERALS

**INCREASE  
PRODUCTION  
AND  
EXTRACTION**



**EXPLOITATION AND EXPORTATION OF  
MINERALS**



**MINERA ESCONDIDA**

Operada por BHP Billiton

# EXPLOITATION AND EXPORTATION OF MINERALS





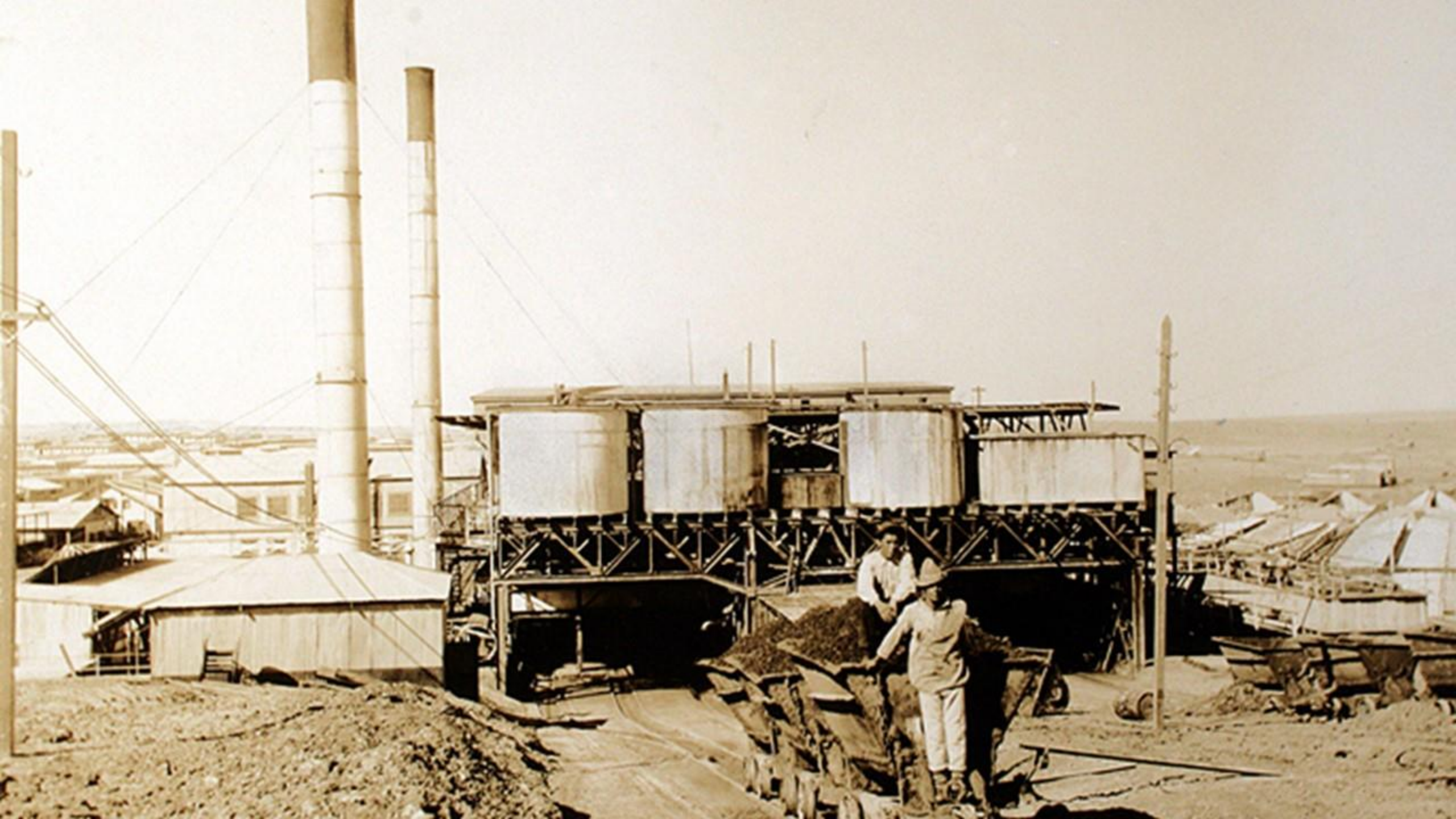


**OPPORTUNITIES**



**UNCERTAINTY**





A glowing lightbulb lies on a patch of green grass. The bulb is illuminated from within, and its glass surface reflects a vibrant green landscape with rolling hills and a bright sky. The text is overlaid on the central part of the bulb.

**STAGE 2: REGIONAL MINING CLUSTER,  
THE REGIONAL ANSWER**

2000



NACIONES UNIDAS

CEPAL

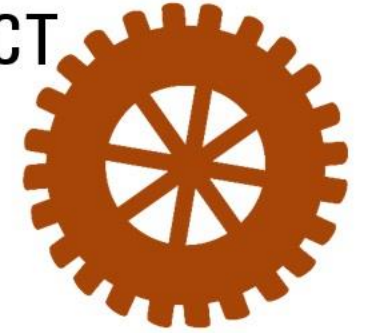
# DEVELOPMENT STRATEGY OF THE REGIONAL GOVERNMENT OF ANTOFAGASTA



## MINING CLUSTER IN THE REGION

ISO local supplier

TECHNOLOGICAL  
PROSPECT



Foreign  
investment



Productive  
and  
technological  
apacities

2000 - 2010



Creation of UCN mining  
Business School



Creation of  
research centers

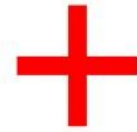




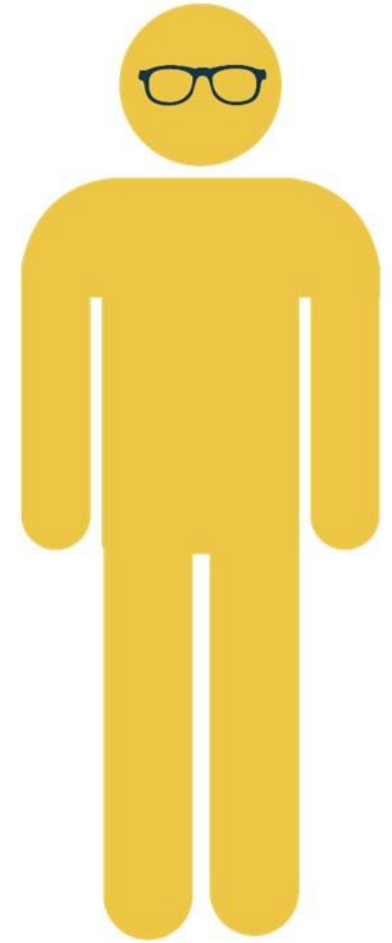
**PUBLIC**



**PRIVATE**



**ACADEMY**





**PUBLIC  
INVESTMENT**



**SUPPLIER  
OFFER**



**GOVERNANCE**

**19%**  
**COPPER**



**2000-2014**

178%



79%  
**ENERGY**



157%  
**WORKFORCE**



2000-2014



vs





An aerial night photograph of a city, likely London, showing a large stadium (Wembley Stadium) in the foreground, a harbor with ships, and a dense urban area with lights. The text is overlaid in the center.

**STAGE 3: MINING CLUSTER, A NEW TERRITORIAL  
DEVELOPMENT AGREEMENT**





**VIRTUOUS, INCLUSIVE  
AND SUSTAINABLE**



# NEW PHASE IN THE CLUSTER

2014

=



PRODUCTIVITY

&



COST

# NEW PHASE IN THE CLUSTER





# ANTOFAGASTA CLUSTER MINERO



10 YEARS











ANTOFAGASTA  
CLUSTER MINERO

Ceremonia de Lanzamiento de la  
Hoja de Ruta del Clúster Minero



# GOVERNANCE PUBLIC-PRIVATE AND ACADEMIC



Chaining with  
industry



Technological  
endeavors



Technological  
SERVICe of I+D



FORMATION OF  
THE HUMAN  
CAPITAL

# REGIONAL VISION

THE ANTOFAGASTA REGION IS A TECHNOLOGICAL HUB, LEADING INNOVATION AND ENTREPRENEURSHIP FROM THE MINING BUSINESS FOR CHILE AND THE WORLD.



CONSOLIDATE A SUSTAINABLE INSTITUTIONALITY OF THE MINING CLUSTER.

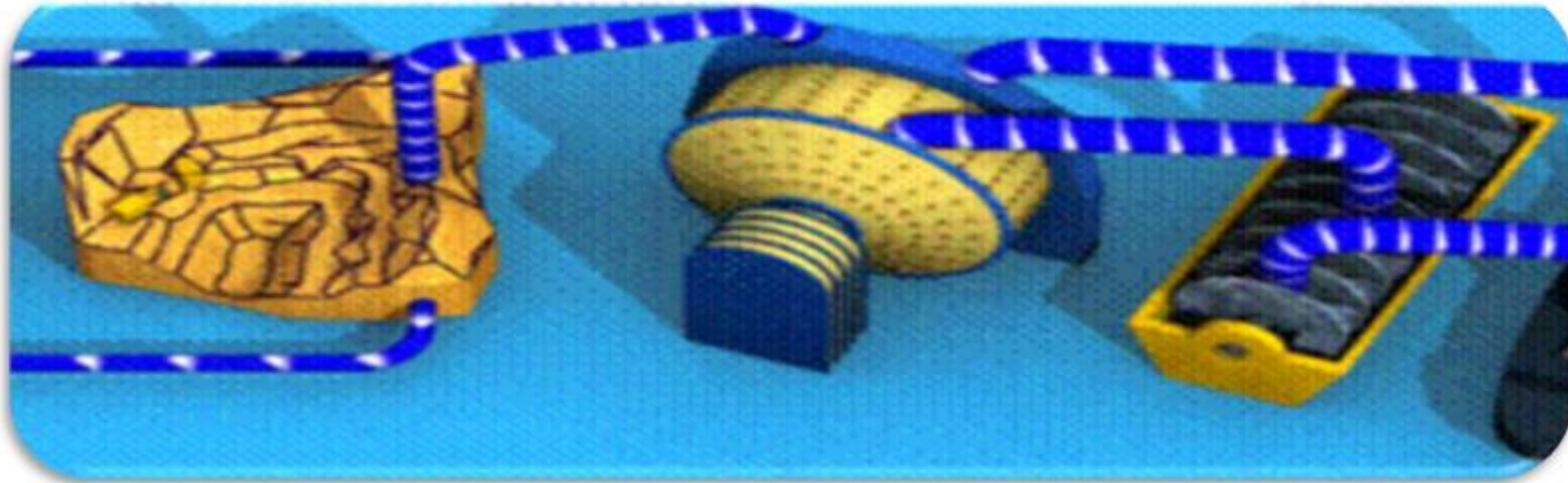
INCREASE THE REGIONAL PARTICIPATION OF SMES IN PURCHASES OF B&S IN THE MINING INDUSTRY.

INCREASE THE REGIONAL EXPORT SUPPLY OF SPECIALIZED SERVICES TO MINING.

# FOCUS OF SPECIALIZED SERVICE PROVIDERS

Extraction

Processing









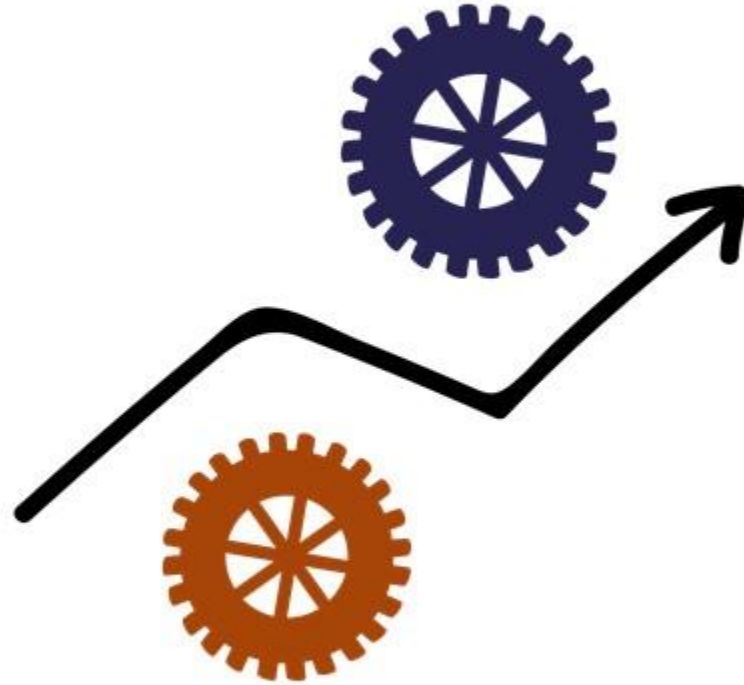






# TRENDS AND ROLE OF THE REGION





2025

**SUPPLIER:**

**5.000**

---

**CHILE**

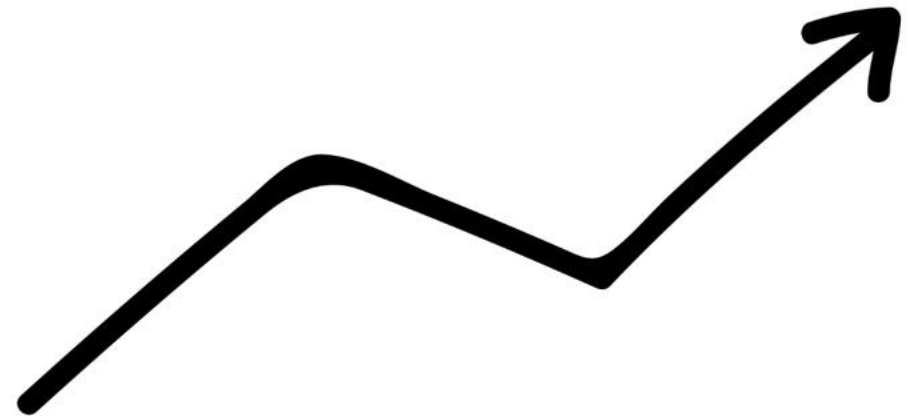
**=**

**1.500**

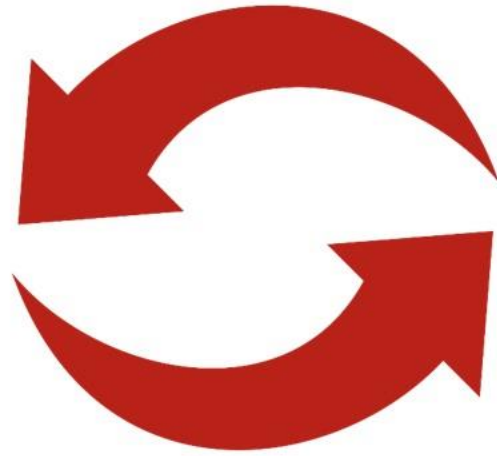
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**ANTOFAGASTA**

# Mining Technological Development

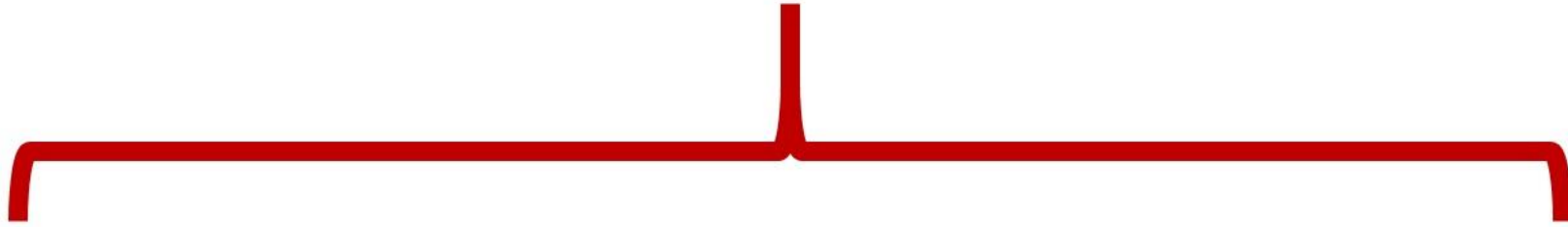






**Network of Regions of OECD countries**

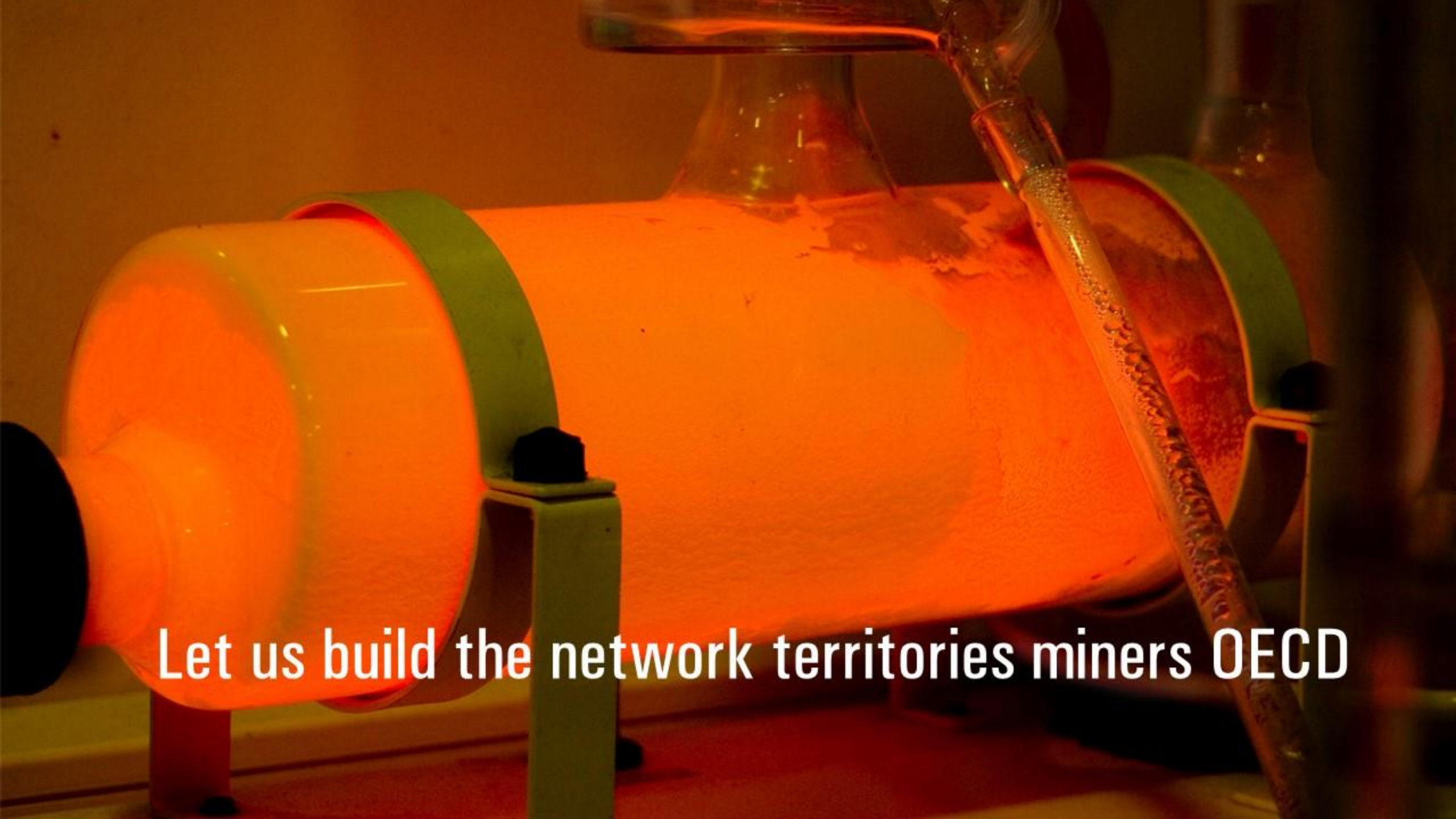
# Network of Regions of OECD countries




Diversification and technological and productive development with focus in the small and medium enterprises providers of the industry.

Sustainable development and quality of life in industrial and mining territories.





Let us build the network territories miners OECD

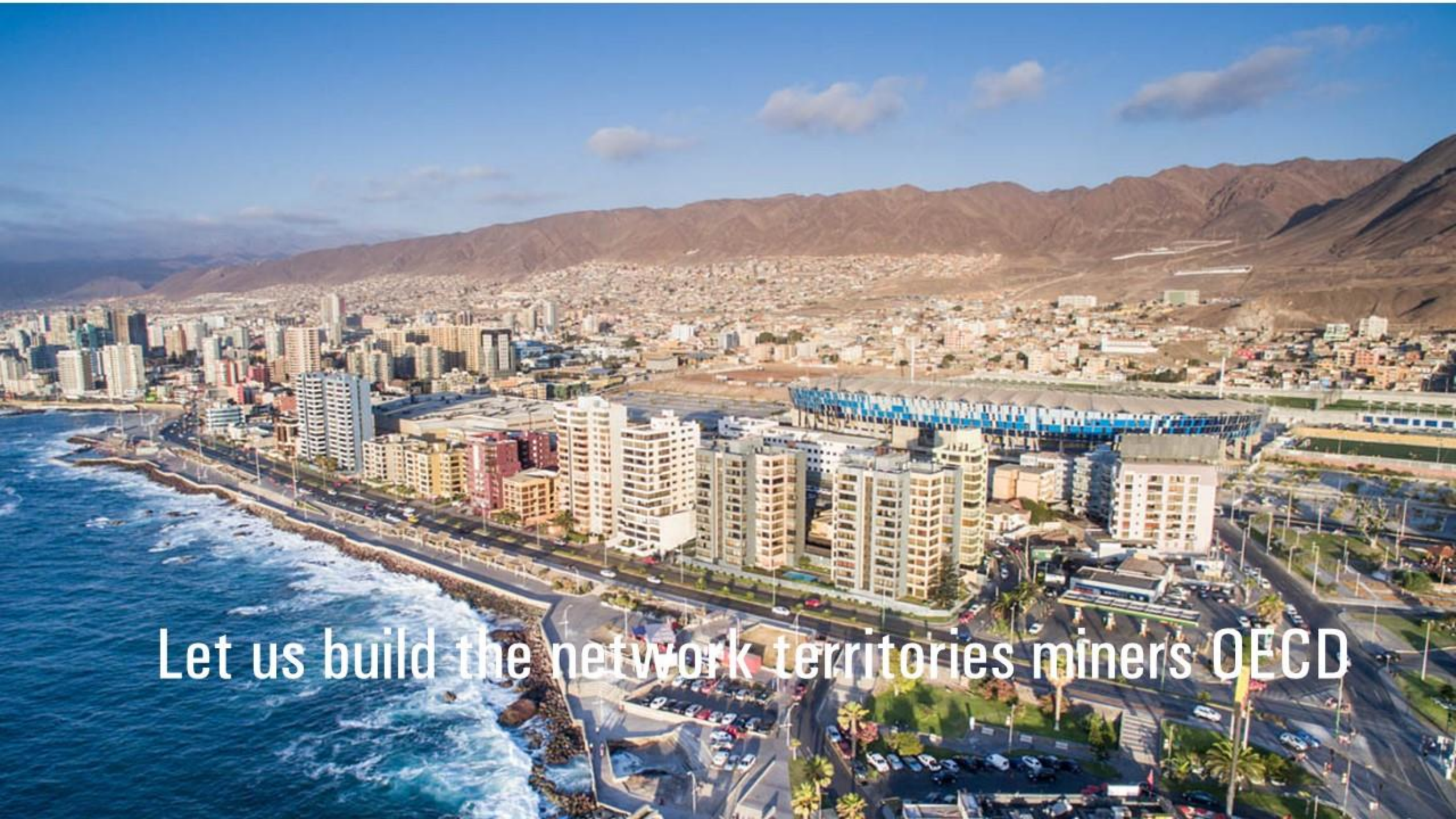


ANTOFAGASTA  
CLUSTER MINERO

Ceremonia de Lanzamiento de la  
Hoja de Ruta del Clúster Minero



Let us build the network territories miners OECD



Let us build the network territories miners OECD



Let us build the network territories miners OECD



Let us build the network territories miners OECD



Let us build the network territories miners OECD

Católica del Norte UDEAR ENM

# Seminario Nacional "Contribuyendo al Desarrollo del Clúster Minero de Antofagasta"

Antofagasta, Viernes 24 de marzo del 2016

Participa: ANTOFAGASTA CLUSTER MINERO

ESQUEMA DE NEGOCIOS MINEROS  
Compañía



ANTOFAGASTA  
CLUSTER MINERO



Let us build the network territories miners OECD





58

MINERO ANTOFAGASTA / CDI

Innovación  
Emprendedores  
Minería  
Tecnología  
Capital Humano  
Descentralización



Comité de Desarrollo Regional



VEN A CONOCER REALIDAD VIRTUAL INMERSIVA

CARACTERÍSTICAS REALES EN REALIDAD VIRTUAL INMERSIVA

CAFETERIA CHILE 2017

CAFETERIA

Let us build the network territories miners OECD





Programa Regional  
CLUSTER MINERO de ANTOFAGASTA

ENM

Let us build the network territories miners OECD



Let us build the network territories miners OECD





**Let us build the network territories miners OECD**



Comité de  
Desarrollo  
Productivo  
Regional  
Región de Antofagasta



ANTOFAGASTA  
CLUSTER MINING

CORFO SERCOTEC

Let us build the network territories miners OECD



# VEN A CONOCER REALIDAD VIRTUAL INMERSIVA



- + EVALUACIÓN
- + CAPACITACIÓN
- + ACREDITACIÓN

ETVI es un sistema de evaluación de psicoseguridad y capacidades cognitivas en condiciones de gran altura geográfica para la selección de personal minero, mediante plataforma integrada transportable de entorno de trabajo virtual inmersivo.

Le... de R...  
Al d... d...  
Guantes simulador... de n...  
Plataforma de movimiento virtual

Electrodos para ECG  
Esfigmomanómetro para PNI  
Sensor infra rojo para SPO2  
Pantalla para Hipóxica



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**Let us build the network territories miners OECD**

**Comité de  
Desarrollo  
Productivo  
Regional**

Región de Antofagasta



Edificio de Fomento Productivo de CORFO  
Antofagasta

[www.corfo.cl](http://www.corfo.cl)

## Contacto:

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Comité de Desarrollo Productivo de Antofagasta

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**Orlando Gahona – Gerente Clúster Minero**

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@corfo  
@fomentoantofa  
@transforma\_cl



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# OECD Mining Regions: building a network to enhance productivity and well-being

5th and 6th October 2017  
Antofagasta - Chile

CONVENES



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COORDINATES



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MEDIA PARTNER

